

WHAT IS CLAIMED:

1. A purified DNA molecule encoding a human nNR7 protein wherein said protein comprises the amino acid sequence as follows:

SILCTGLFKV DPRGEVGAKN LPPSSPRGPE ANLEVRPKES WNHADFVHCE
DTESVPGKPS VNADEEVGGP QICRVCGDKA TGYHFNVMT C EGCKGFFRRA
MKRNARLRCP FRKGACEITR KTRRQCQACR LRKCLES GMK KEMIMSDEAV
EERRALIKRK KSERTGTQPL GVQGLTEEQR MMIRELMDAQ MKTFD TTF SH
FKNFRLPGVL SSGCELPESL QAPSREEAAK WSQVRKDLCS LKVSLQLRGE
DGSVWNYKPP ADSSGKEIFS LLPHMADMST YMFKGIISFA KVISYFRDLP
IEDQISLLKG AAFELCQLRF NTVFNAETGT WECGRLSYCL EDTAGGFQQL
LLEPMLKFHY MLKKLQLHEE EYVLMQAISL FSPDRPGVLQ HRVVDQLQEQ
FAITLKS YIE CNRPQPAHRF LFLKIMAMLT ELRSINAQHT QRLRLRIQDIH
PFATPLMQEL FGITGS, as set forth in three-letter
abbreviation in SEQ ID NO: 2.

2. An expression vector for expressing a human nNR7 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 1.

3. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 2.

4. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 2 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said expression vector.

5. A purified DNA molecule encoding a human nNR7 protein wherein said protein consists of the amino acid sequence as follows:

SILCTGLFKV DPRGEVGAKN LPPSSPRGPE ANLEVRPKES WNHADFVHCE
5 DTESVPGKPS VNADEEVGGP QICRVCGDKA TGYHFNVMTC EGCKGFFRRA
MKRNARLRCP FRKGACEITR KTRRQCQACR LRKCLES GMK KEMIMSDEAV
EERRALIKRK KSERTGTQPL GVQGLTEEQR MMIRELMDAQ MKTFD TTF SH
FKNFRLPGVL SSGCELPESL QAPSREEAAK WSQVRKDLCS LKVSLQLRGE
DGSVWNYKPP ADSSGKEIFS LLPHMADMST YMFKGIISFA KVISYFRDLP
10 IEDQISLLKG AAFELCQLRF NTVFNAETGT WECGRLSYCL EDTAGGFQQL
LLEPMLKFHY MLKKLQLHEE EYVLMQAISL FSPDRPGVLQ HRVVDQLQEQ
FAITLKS YIE CNRPQPAHRF LFLKIMAMLT ELRSINAQHT QRLRLRIQDIH
PFATPLMQEL FGITGS, as set forth in three-letter abbreviation in
SEQ ID NO: 2.

6. An expression vector for expressing a human nNR7 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 5.

7. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 6.

8. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 6 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said expression vector.

9. A purified DNA molecule encoding a human nNR7 protein wherein said DNA molecule consists of the nucleotide sequence as set forth in SEQ ID NO: 1, as follows:

TACGCCAAGC TCGAAATTAA CCCTCACTAA AGGGAACAAA AGCTGGAGCT
 CCACCGCGGT GGC GGCCGCT CTAGAACTAG TGGATCCCCC GGGCTGCAGG
 AATTCGAATT CTCATAACCT ATGACTAGGA CGGGAAGAGG AAGCACTGCC
 TTTACTTCAG TGGGAATCTC GGCCTCAGCC TGCAAGCCAA GTGTTACAG
 5 TGAGAAAAGC AAGAGAATAA GCTAATACTC CTGTCCTGAA CAAGGCAGCG
 GCTCCTTGGT AAAGCTACTC CTTGATCGAT CCTTTGCACC GGATTGTTCA
 AAGTGGACCC CAGGGGAGAA GTCGGAGCAA AGAACTTACC ACCAAGCAGT
 CCAAGAGGCC CAGAAGCAA CCTGGAGGTG AGACCCAAAG AAAGCTGGAA
 CCATGCTGAC TTTGTACACT GTGAGGACAC AGAGTCTGTT CCTGGAAAGC
 10 CCAGTGTCAA CGCAGATGAG GAAGTCGGAG GTCCCCAAAT CTGCCGTGTA
 TGTGGGGACA AGGCCACTGG CTATCACTTC AATGTCATGA CATGTGAAGG
 ATGCAAGGGC TTTTTCAGGA GGGCCATGAA ACGCAACGCC CGGCTGAGGT
 GCCCCTTCCG GAAGGGCGCC TGCGAGATCA CCCGGAAGAC CCGGCGACAG
 TGCCAGGCCT GCCGCCTGCG CAAGTGCCTG GAGAGCGGCA TGAAGAAGGA
 15 GATGATCATG TCCGACGAGG CCGTGGAGGA GAGGCGGGCC TTGATCAAGC
 GGAAGAAAAG TGAACGGACA GGGACTCAGC CACTGGGAGT GCAGGGGCTG
 ACAGAGGAGC AGCGGATGAT GATCAGGGAG CTGATGGACG CTCAGATGAA
 AACCTTTGAC ACTACCTTCT CCCATTTCOA GAATTTCCGG CTGCCAGGGG
 TGCTTAGCAG TGGCTGCGAG TTGCCAGAGT CTCTGCAGGC CCCATCGAGG
 20 GAAGAAGCTG CCAAGTGGAG CCAGGTCCGG AAAGATCTGT GCTCTTTGAA
 GGTCTCTCTG CAGCTGCGGG GGGAGGATGG CAGTGTCTGG AACTACAAAC
 CCCCAGCCGA CAGTGGCGGG AAAGAGATCT TCTCCCTGCT GCCCCACATG
 GCTGACATGT CAACCTACAT GTTCAAAGGC ATCATCAGCT TTGCCAAAGT
 CATCTCCTAC TTCAGGGACT TGCCCATCGA GGACCAGATC TCCCTGCTGA
 25 AGGGGGCCGC TTTCGAGCTG TGTCAACTGA GATTCAACAC AGTGTTCAAC
 GCGGAGACTG GAACCTGGGA GTGTGGCCGG CTGTCTACT GCTTGAAGA
 CACTGCAGGT GGCTTCCAGC AACTTCTACT GGAGCCCATG CTGAAATTCC
 ACTACATGCT GAAGAAGCTG CAGCTGCATG AGGAGGAGTA TGTGCTGATG
 CAGGCCATCT CCCTCTTCTC CCCAGACCGC CCAGGTGTGC TGCAGACCG
 30 CGTGGTGGAC CAGCTGCAGG AGCAATTGCG CATTACTCTG AAGTCCTACA
 TTGAATGCAA TCGGCCCCAG CCTGCTCATA GGTTCCTGTT CCTGAAGATC
 ATGGCTATGC TCACCGAGCT CCGCAGCATC AATGCTCAGC ACACCCAGCG
 GCTGCTGCGC ATCCAGGACA TACACCCCTT TGCTACGCCC CTCATGCAGG
 AGTTGTTTCGG CATCACAGGT AGCTGAGCGG CTGCCCTTGG GTGACACCTC
 35 CGAGAGGCAG CCAGACCCAG AGCCCTCTGA GCCGCCACTC CCGGGCCAAG
 ACAGATGGAC ACTGCCAAGA GCCGACAATG CCCTGCTGGC CTGTCTCCCT

- 46 -

12. An expression vector for expressing a human nNR7 protein wherein said expression vector comprises a DNA molecule of claim 10.

5 13. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 11.

10 14. A host cell which expresses a recombinant human nNR7 protein wherein said host cell contains the expression vector of claim 12.

15 15. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 11 into a suitable host cell; and,

20 (b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7 protein from said

25 16. A purified human nNR7 protein which comprises the amino acid sequence as set forth in SEQ ID NO:2.

17. A purified human nNR7 protein of claim 16 which consists of the amino acid sequence as set forth in SEQ ID NO:2.

30 18. A method for determining whether a substance is capable of binding to nNR7 comprising:

(a) providing test cells by transfecting cells with an expression vector that directs the expression of nNR7 in the cells;

(b) exposing the test cells to the substance;

35 (c) measuring the amount of binding of the substance to nNR7;

(d) comparing the amount of binding of the substance to nNR7 in the test cells with the amount of binding of the substance to control cells that have not been transfected with nNR7.

5 19. A method of determining whether a substance acts as a modulator of nNR7 activity which comprises:

(a) providing test cells by transfecting cells with a receptor expression vector that directs the expression of nNR7 in the cells;

10 (b) providing test cells by transfecting the cells of step (a) with a second reporter expression vector that directs expression of a reporter gene under control of a regulatory element which is responsive to nNR7

(b) exposing the test cells to the substance;

15 (c) measuring the amount of binding of expression of the reporter gene;

(d) comparing the amount of expression of the reporter gene in the test cells with the amount of expression of the reporter gene in control cells that has been transfected with a reporter vector of step (b) but not a receptor vector of step (a).

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20. A purified DNA molecule encoding a human nNR7 protein wherein said protein comprises the amino acid sequence as follows:

25 MTVTRTHHFK EGSLRAPAIP LHSAAELAS NHPRGPEANL EVRPKESWNH
ADVFHCEDTE SVPGKPSVNA DEEVGGPQIC RVC GDKATGY HFNVMTCEGC
KGFFRRAMKR NARLRC PFRK GACEITR KTR RQCQACRLRK CLESGMKKEM
IMSDEAVEER RALIKRKKSE RTGTQPLGVQ GLTEEQRMMI RELMDAQMKT
FDTTF SHFKN FRLPGVLSSG CELPESLQAP SREEAAKWSQ VRKDLCSLKV
30 SLQLRGEDGS VWNYPKPPADS GGKEIFSLLP HMADMSTYMF KGIISFAKVI
SYFRDLPIED QISLLKGAAF ELCQLRFNTV FNAETGTWEC GRLSYCLEDT
AGGFQQLLLE PMLKFHYMLK KLQLHEEEYV LMQAISLFSFSP DRPGVLQHRV
VDQLQE QFAI TLKSYIECNR PQPAHRFLFL KIMAMLTEL R SINAQHTQRL
LRIQDIHPFA TPLMQELFGI TGS, as set forth in the three-letter
35 abbreviation in SEQ ID NO: 18.

21. An expression vector for expressing a human nNR7-1 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 20.

22. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 21.

23. A process for expressing a human nNR7-1 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 21 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

24. A purified DNA molecule encoding a human nNR7-1 protein wherein said protein consists of the amino acid sequence as follows:

MTVTRTHHFK EGSLRAPAIP LHSAAAELAS NHPRGPEANL EVRPKESWNH
 ADFVHCEDTE SVP GKPSVNA DEEVGGPQIC RVC GDKATGY HFNVMTCEGC
 KGFFRRAMKR NARLRCPFRK GACEITRKTR RQCQACRLRK CLESGMKKEM
 IMSDEAVEER RALIKRKKSE RTGTQPLGVQ GLTEEQRMMI RELMDAQMKT
 FDTTFSHFKN FRLPGVLSSG CELPESLQAP SREEAAKWSQ VRKDLC SLKV
 SLQLRGEDGS VWNYPKPPADS GGKEIFSLLP HMADMSTYMF KGIISFAKVI
 SYFRDLPIED QISLLKGAFF ELCQLRFNTV FNAETGTWEC GRLSYCLEDT
 AGGFQQLLLE PMLKFHYMLK KLQLHEEEYV LMQAISLFSP DRPGVLQHRV
 VDQLQE QFAI TLKSYIECNR PQPAHRFLFL KIMAMLTCLR SINAQHTQRL
 LRIQDIHPFA TPLMQELFGI TGS, as set forth in the three-letter
 abbreviation in SEQ ID NO: 18.

25. An expression vector for expressing a human nNR7-1 protein in a recombinant host cell wherein said expression vector comprises a DNA molecule of claim 24.

26. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 25.

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27. A process for expressing a human nNR7-1 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 25 into a suitable host cell; and,

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(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

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28. A purified DNA molecule encoding a human nNR7-1 protein wherein said DNA molecule consists of the nucleotide sequence as set forth in SEQ ID NO: 17, as follows:

20 TCCATCCTAA TACGACTCAC TATAGGGCTC GAGCGGCCGC CCGGGCAGGT
CTTTTGGCCT GCTGGGTTAG TGCTGGCAGC CCCCTGAGGC CAAGGACAGC
AGCATGACAG TCACCAGGAC TCACCACTTC AAGGAGGGGT CCCTCAGAGC
ACCTGCCATA CCCCTGCACA GTGCTGCGGC TGAGTTGGCT TCAAACCATC
CAAGAGGCCC AGAAGCAAAC CTGGAGGTGA GACCCAAAGA AAGCTGGAAC
CATGCTGACT TTGTACACTG TGAGGACACA GAGTCTGTTC CTGGAAGGCC
25 CAGTGTCAAC GCAGATGAGG AAGTCGGAGG TCCCCAAATC TGCCGTGTAT
GTGGGGACAA GGCCACTGGC TATCACTTCA ATGTCATGAC ATGTGAAGGA
TGCAAGGGCT TTTTCAGGAG GGCCATGAAA CGCAACGCCC GGCTGAGGTG
CCCCTTCCGG AAGGGCGCCT GCGAGATCAC CCGGAAGACC CGGCGACAGT
GCCAGGCCTG CCGCCTGCGC AAGTGCCTGG AGAGCGGCAT GAAGAAGGAG
30 ATGATCATGT CCGACGAGGC CGTGGAGGAG AGGCGGGCCT TGATCAAGCG
GAAGAAAAGT GAACGGACAG GGA CTCAGCC ACTGGGAGTG CAGGGGCTGA
CAGAGGAGCA GCGGATGATG ATCAGGGAGC TGATGGACGC TCAGATGAAA
ACCTTTGACA CTACCTTCTC CCATTTCAAG AATTTCCGGC TGCCAGGGGT
GCTTAGCAGT GGCTGCGAGT TGCCAGAGTC TCTGCAGGCC CCATCGAGGG
35 AAGAAGCTGC CAAGTGGAGC CAGGTCCGGA AAGATCTGTG CTCTTTGAAG
GTCTCTCTGC AGCTGCGGGG GGAGGATGGC AGTGTCTGGA ACTACAAACC

- 51 -

ATAAGGCATT CCACACCTAA GAACTAGTTT TGGGAAATGT AGCCCTGGGT
TTAATGTCAA ATCAAGGCAA AAGGAATTAA ATAATGTACT TTTGGCTAGA
GGGGTAAACT TTTTGGCCT TTTTCTGGGG AAAATAATGT GGGGCTGTGG
(SEQ ID NO: 17).

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29. A DNA molecule of claim 28 which consists of nucleotide 104 to about nucleotide 1525 of SEQ ID NO: 17.

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30. An expression vector for expressing a human nNR7-1 protein wherein said expression vector comprises a DNA molecule of claim 28.

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31. An expression vector for expressing a human nNR7-1 protein wherein said expression vector comprises a DNA molecule of claim 29.

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32. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 30.

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33. A host cell which expresses a recombinant human nNR7-1 protein wherein said host cell contains the expression vector of claim 31.

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34. A process for expressing a human nNR7 protein in a recombinant host cell, comprising:

(a) transfecting the expression vector of claim 29 into a suitable host cell; and,

(b) culturing the host cells of step (a) under conditions which allow expression of said the human nNR7-1 protein from said expression vector.

35. A purified human nNR7-1 protein which comprises the amino acid sequence as set forth in SEQ ID NO:18.

5 36. A purified human nNR7-1 protein of claim 35 which consists of the amino acid sequence as set forth in SEQ ID NO:18.

37. A method for determining whether a substance is capable of binding to nNR7-1 comprising:

- 10 (a) providing test cells by transfecting cells with an expression vector that directs the expression of nNR7-1 in the cells;
- (b) exposing the test cells to the substance;
- (c) measuring the amount of binding of the substance to nNR7-1;
- 15 (d) comparing the amount of binding of the substance to nNR7-1 in the test cells with the amount of binding of the substance to control cells that have not been transfected with nNR7-1.

38. A method of determining whether a substance acts as a modulator of nNR7-1 activity which comprises:

- 20 (a) providing test cells by transfecting cells with a receptor expression vector that directs the expression of nNR7-1 in the cells;
- (b) providing test cells by transfecting the cells of step (a) with a second reporter expression vector that directs expression of a reporter gene under control of a regulatory element which is responsive to nNR7-1
- 25 (b) exposing the test cells to the substance;
- (c) measuring the amount of binding of expression of the reporter gene;
- 30 (d) comparing the amount of expression of the reporter gene in the test cells with the amount of expression of the reporter gene in control cells that has been transfected with a reporter vector of step (b) but not a receptor vector of step (a).

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